

21. (Newly Added) An antenna array comprising:

a plurality of stacked radiating elements, each stacked radiating element comprising a first radiator and a second radiator;

a printed circuit board disposed adjacent to said first radiator, said printed circuit board comprising a plurality of stubs and a ground plane, said first radiator being disposed between said second radiator and said printed circuit board;

a plurality of slots positioned within said ground plane, each slot being associated with a respective stacked radiating element;

a plurality of cavities adjacent to said ground plane and respective slots whereby said stubs feed said slots and said slots excite respective cavities such that said radiators radiate RF energy with increased beamwidth and bandwidth; and

a radome positioned over the plurality of stacked radiating elements, said radome improving the performance of the antenna array.

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22. (Newly Added) The antenna array of Claim 21, wherein each cavity has two or more walls that form corners, each corner comprising a predetermined spacing to substantially reduce or eliminate passive intermodulation.

23. (Newly Added) The antenna array of Claim 22, wherein at least one predetermined spacing comprises a dielectric.

24. (Newly Added) The antenna array of Claim 23, wherein the dielectric comprises air.

25. (Newly Added) The antenna array of claim 21, wherein said radome produces an average increase in antenna array peak gain, measured in dBd at five equally spaced frequencies from approximately 806 MHz to 896 MHz of up to approximately 1.7% relative to a peak gain of said antenna array operating without said radome.

26. (Newly Added) The antenna array of claim 21, wherein said radome produces an average increase in upper side lobe suppression, measured in dB at five equally spaced frequencies from approximately 806 MHz to 896 MHz of up to approximately 25% relative to upper side lobe suppression of said antenna array operating without said radome.

27. (Newly Added) The antenna array of claim 21, wherein said radome produces an average increase in return loss, measured in -dB at five equally spaced frequencies from approximately 806 MHz to 896 MHz of up to approximately 19% relative to a return loss of said antenna array operating without said radome.

28. (Newly Added) A method for improving the performance of an antenna array comprising a plurality of stacked radiating elements comprising the steps of:

positioning a plurality of slots within a ground plane of a printed circuit board;
propagating RF energy along a feed network;
dissipating heat from the feed network into portions of a metallic cavity;
exciting the slots to establish a mode of RF energy within the metallic cavity;
exciting patch radiators with the RF energy produced by the slots and the cavity; and

improving performance of the antenna array by protecting the antenna array with a radome.

29. (Newly Added) The method of claim 28, wherein the step of improving the performance of the antenna array by protecting the antenna array with a radome comprises increasing the average peak gain of the antenna array measured in dBd at five equally spaced frequencies from approximately 806 MHz to 896 MHz of up to approximately 1.7% relative to a peak gain of the antenna array operating without said radome.

30. (Newly Added) The method of claim 28, wherein the step of improving the performance of the antenna array by protecting the antenna array with a radome comprises increasing the average upper side lobe suppression, measured in dB at five equally spaced